RIPARIAN HABITAT EVALUATION

RAMIREZ CANYON PARK

CITY OF MALIBU, CALIFORNIA

Prepared for:

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LSA

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SUMMARY

The Ramirez Canyon Park (Park) contains a riparian corridor that has been impacted by development since 1953, beginning with the construction of the first residence at the site. The majority of the Park's site was disturbed prior to the enactment of the Coastal Act (CCA) and the establishment of the California Coastal Commission in 1977. All five residential buildings and infrastructure were in place prior to 1977. The hillsides were graded to provide pads for the five residences, a tennis court, and a swimming pool. A sixth pad was graded and is currently used as a garden. Landscaping prior to 1977 involved creation of a flat meadow area and gardens. A retaining wall and driveway bridge were already present at the Barwood Headquarters.

After 1977, additional site grading associated with landscaping and gardens was done. Cobble walkways and bridges were constructed at Ramirez Creek. The creek was realigned and rock retaining walls were installed as part of the additional landscape features. Rock gabions in the creek and realignment of the channel have altered the natural hydrology of the creek.

Development activities in Ramirez Creek of regulatory importance to the California Coastal Commission (CCC) are the installation of rock walls, gabions and other creek channel modifications in Ramirez Creek within Ramirez Canyon Park. Total impacts to the creek channel after 1977 are estimated to be 1,600 linear feet (0.18 acre).

The further alteration of the stream channel due to the construction of the rock walls did not greatly decrease the value of the riparian habitat of the creek. There was a high degree of disturbance already present due to the previous 50 years of building improvements, human intrusion, domestic animals, and non-native plants. Riparian trees (sycamore and coast live oak) have persisted through the development of the site.

Now under the stewardship of the Santa Monica Mountains Conservancy (SMMC), the riparian habitat within Ramirez Canyon Park will be enhanced through the completion the following tasks:

- Removal of non-native plants from the stream channel and banks;
- Long-term maintenance to reduce re-introduction of non-native plants;
- Planting of native groundcover and shrubs in stream channel and banks;
- Removal of one pedestrian bridge;
- Demolition of the tennis court and reduction in the height of the rock wall adjacent to the tennis court;
- Creation of 0.16 acre of wetland in the excavated tennis court site;
- Extraction of unstable or exposed gabions; and
- Installation of rock and log stabilizers to stabilize the creek bottom in order to return channel slope to pre-existing conditions.

Total amount of created (0.16 acre) and enhanced (0.18 acre) riparian habitat will be at least 0.34 acre.

INTRODUCTION

This report was request by the Santa Monica Mountains Conservancy (SMMC) in order to document the probable changes to riparian habitat at Ramirez Canyon Park (Park) over the past 25 years. The timing of stream and riparian habitat alteration is of importance because development impacting State waters and associated habitats was not regulated by the California Coastal Commission (CCC) until after January 1, 1977. The CCC became a permanent government entity through the enactment of the California Coastal Act (CCA) on that date. The CCC has jurisdiction in the coastal zone over any division of land, any change in intensity of State water use, and public access to State waters pursuant to CCA policies. Another milestone was the year 1994 when the privately owned parcels, which are now part of Ramirez Canyon Park, were donated to the SMMC.

The analysis in this report provides baseline information on the riparian habitat impacts due to past development along the Ramirez Creek channel. Research on the timing of development and associated impacts was conducted using City of Malibu Building Permit records and historical aerial photography. Time periods of concern are (1) before January 1, 1977; (2) between 1977 and 1994; and (3) after 1994. A summary of impacts to the riparian habitat is provided and discussed (Table A).

Table A - Timing and Degree of Impacts to Riparian Habitat at the Ramirez Canyon Park

	Impacts to Riparian Habitat		
	Pre-1977	**1977 - 1994**	**1994 -1999**
Affected Habitat Functions and Values	Impacts to riparian habitat and creek channel between residences, tennis court, and meadow.	Impact to 0.18-acre creek channel. Rock revetments installed in creek channel adjacent to meadow, residences and tennis court.	No impacts.
Wildlife Habitat	Impacted by human intrusion. Wildlife use is limited to riparian trees.	Further restriction to water access.	No impacts.
Specialized Plant Habitat	Impacted by disturbance and introduction of non-native species.	Riparian trees still present along creek.	No impacts.
Ecosystem Productivity	Impacted by residential development.	Permanent separation of stream from adjacent slopes.	No impacts.
Water Quality	Temporary construction impacts.	Temporary construction impacts.	No impacts.
Flood Attenuation	Mostly likely affected by residential development on the property.	Decreased function with increased discharge velocity. Gabions installed in creek channel to reduce the increased velocity in stream flow caused by rock walls and creek realignment.	No impacts.

A general description of the proposed Ramirez Creek enhancement project is provided in this report. The SMMC will prepare a more detailed creek enhancement plan, required by the CCC, as a separate document. The creek enhancement plan will also comply with the conditions of the California Department of Fish and Game (CDFG) streambed alteration agreement for the creek enhancement project.

The Park is within western Los Angeles County in the northernmost portion of the City of Malibu (Figure 1). The site is located at the end of Ramirez Canyon Road and is bordered on three sides by the Santa Monica Mountains National Recreational Area. The southeast boundary is adjacent to residential development and open land within the City of Malibu.

The Park encompasses 22.6 acres within a narrow canyon identified as Ramirez Canyon. The site is surrounded by steep hillsides covered with coastal sage scrub. Along the western edge of the property is the riparian corridor of Ramirez Creek.

METHODS

The changes to riparian habitat at the Park were evaluated by interpreting historical aerial photos taken in 1975, 1976, and 2001, with the use of an as-built site map, by reviewing legal records, and by conducting field surveys on December 13 and 21, 1999. Distance and acreage were measured using an engineer's ruler and rotary map scale. Stream length was measured between the north and south property boundaries as shown on site plans (Aquilar Engineering, Inc., 1995). The average streambed width was measured in the field.

SITE CONDITIONS BEFORE 1977

The extent of development and stream alternation prior to the permanent establishment of the CCC in 1977 is of importance, since proposed alterations to State waters (tributary streams, rivers, wetlands, and riparian habitat) in the coastal zone were not regulated by the CCC. Any stream alteration or removal of riparian vegetation completed prior to 1977 would not have been in violation of the yet to be enacted CCA. Therefore, knowing the existing land development, the condition of the stream and alterations to the associated habitat that had occurred prior to 1977 is important in order to establish a baseline of the site conditions at the Park.

The value of the riparian corridor as native plant and wildlife habitat was impacted prior to 1977 by residential development and human activities on the site. The ecosystem productivity was impacted at that time due to the construction of the residences, roads, stream crossings, culverts, bank stabilization structures, and other alterations (Figure 2). The stream alterations resulted in the removal of riparian vegetation, loss of nutrient cycling, loss of organic debris deposition and transport, sediment retention and loss of connectivity to surrounding upland habitat. Water quality was temporarily impacted during construction until adequate groundcover re-established and after the creek bed stabilized. The creek has down-cut within the walled channel due to the steeper slope of the modified channel. Sediments are being trapped in parts of the creek by the gabions and scoured in other areas.

The flood attenuation function of this reach of channel has changed since the stream channel morphology was altered. Based on the typical development patterns of the housing area immediately downstream, it is likely the channel banks were stabilized with rip-rap or revetment, but with some areas left as an earthen channel. The rock walls stopped over-bank flooding and hinder groundwater discharge/recharge and increased discharge rates.

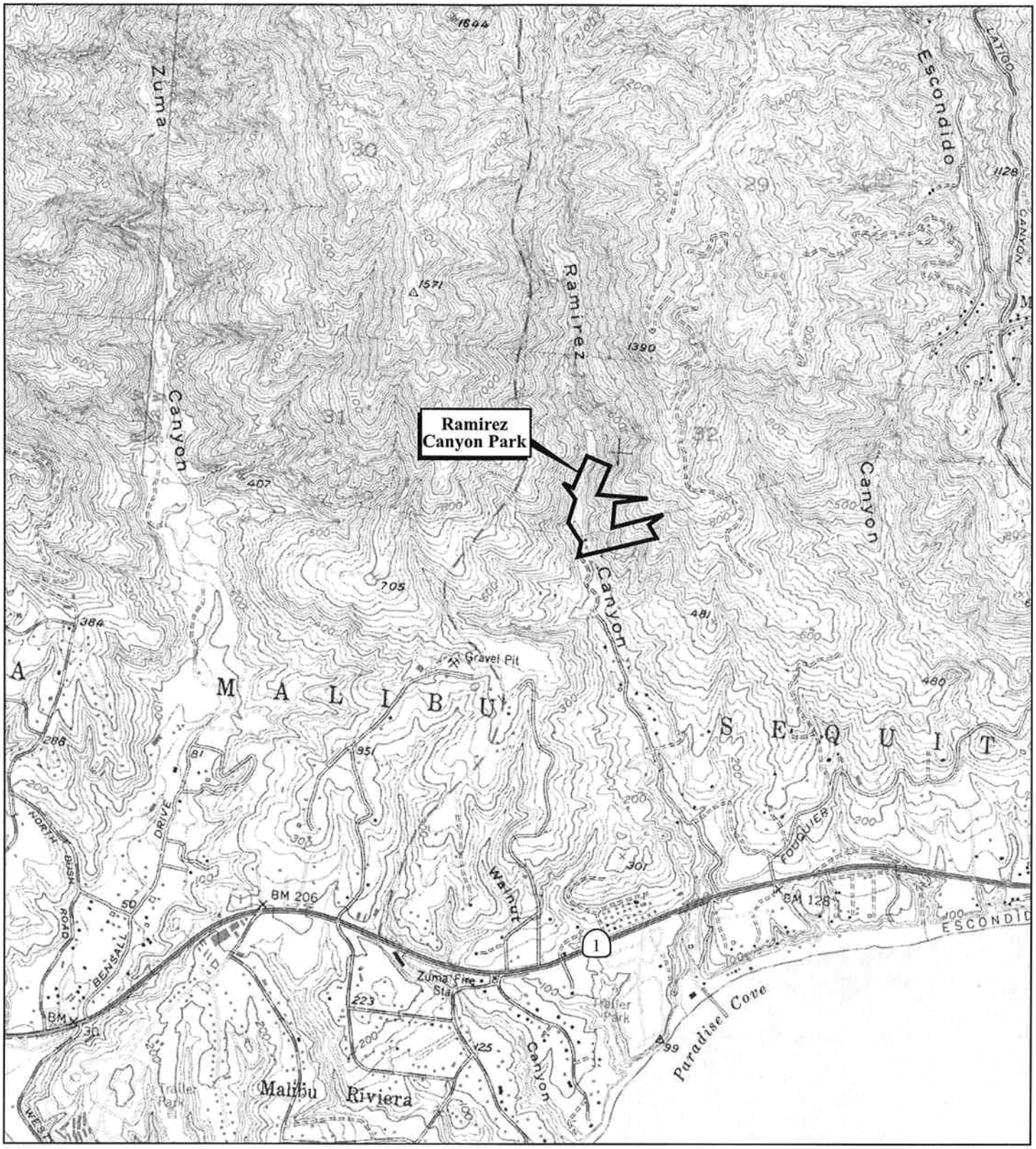

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FIGURE 1

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SOURCE: USGS 7.5' QUAD, Point Dume, CA.

Ramirez Canyon Park
Regional Location Map

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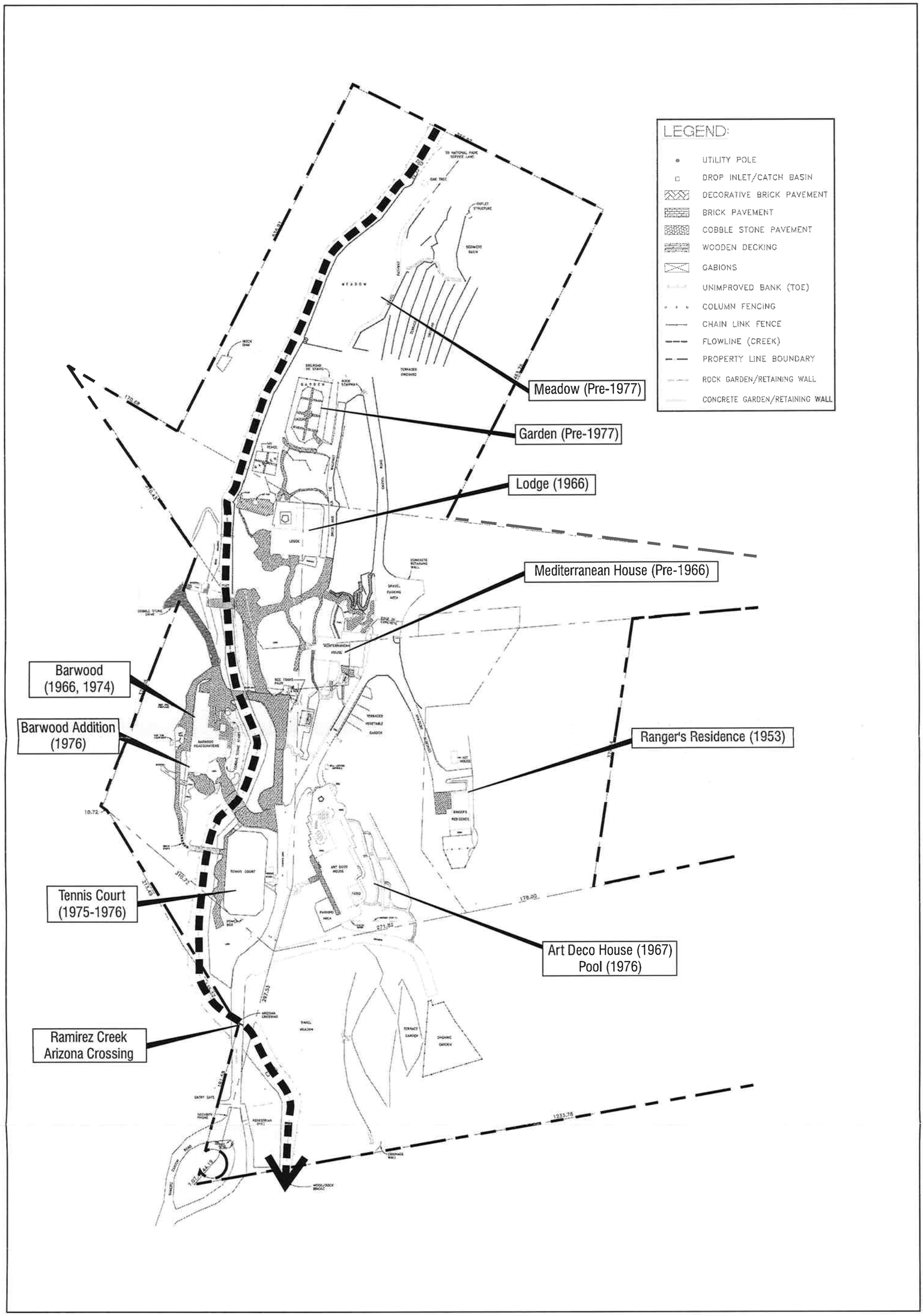

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FIGURE 2

Ramirez Canyon Park
As-Built Site Map

SOURCE: Aguilar Engineering, Inc. 2/7/95

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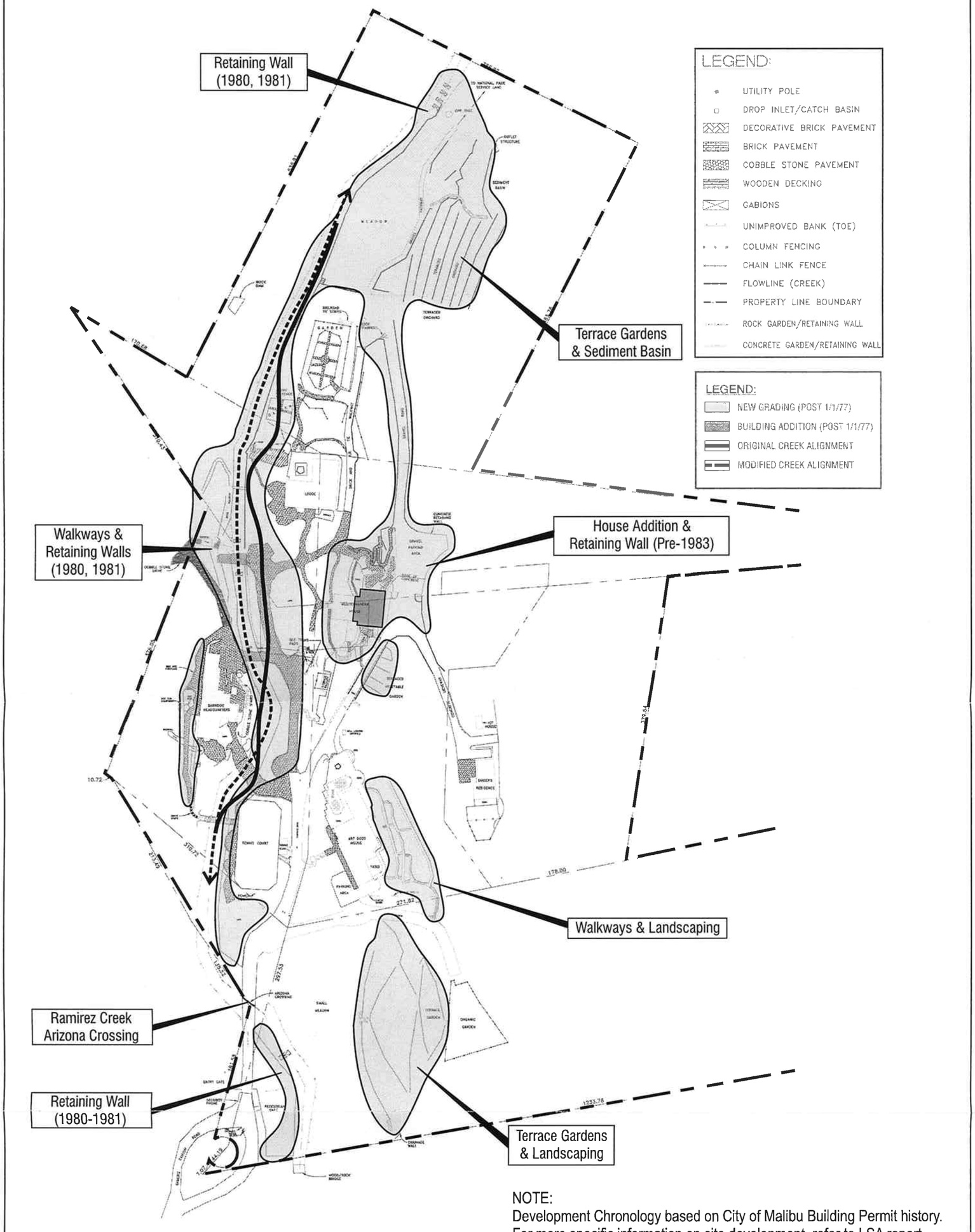

NOTE:
Development Chronology based on City of Malibu Building Permit history. For more specific information on site development, refer to LSA report "Project Description for the Streisand Center for Conservancy Studies" prepared for Santa Monica Mountains Conservancy on March 14, 1995.

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BASE MAP SOURCE: Aguilar Engineering, Inc. 2/7/95

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FIGURE 3

Ramirez Canyon Park

Area of Site Modification Subsequent to January 1, 1977

All five residences, the tennis court, meadow and associated infrastructures were in place prior to 1977 (LSA, 1995b). The roads and crossings as they currently exist were also constructed prior to 1977. Fill material and supporting structures were placed into the channel as part of the road construction. The road crossed the creek channel at the park entrance (Arizona crossing) and on both sides of the Barwood residence. As shown in a 1975 aerial photo (Appendix A), the five residences were already constructed on the property. The garden and meadow areas were clearly visible due to recent vegetation clearing. It is unknown what other retaining structures were in place to support the fill material for the residential pads prior to the construction of the rock walls. However, it is likely that some type of bank stabilization measures were constructed prior to 1977 to protect the residences and the two road crossings. An older section of rock wall is present along the creek bank and west of the tennis court. Building permits were pulled in 1980 and 1981 for rock walls. One was recorded as 250 feet in length and the other wall length was unrecorded in the City of Malibu building permit records.

As shown in the 1976 aerial photo, the vegetation of the site is naturally sparse except for the riparian vegetation in the stream channel. The vegetation of the site was altered on the canyon slopes and up to the creek edge to build the residences and infrastructure. All native plants adjacent to the creek channel were disturbed and the vegetation removed from the development sites, roads, and meadow area. The majority of the riparian vegetation was cleared along the creek adjacent to the garden and meadow area (see 1975 aerial photograph). The mature riparian trees appear not to have been removed from the creek area, as they are visible in all the aerial photos. Thus, the functions and values of the riparian habitat were diminished by the development of the site prior to 1977. Plant and animal habitat was permanently altered and ecosystem productivity reduced due to the continued human presence and alteration of the landscape at the Park.

SITE CONDITIONS AFTER JANUARY 1, 1977

Building records were researched at the City of Malibu Department of Planning and additional historical aerial photos were obtained in order to determine the timing of any development or stream alterations after the establishment of the CCC. Any development after January 1, 1977, was deemed by the CCC the responsibility of the current landowner. Any new land development permit request would also require inclusion of the previously incurred impacts to State waters and riparian habitat.

After January 1, 1977, the riparian habitat at the Park was disturbed by the installation of rock walls along the previously impacted 1,600-foot creek channel adjacent to the residences and meadow. These additional impacts occurred during the early 1980s (LSA, 1995b). The Park was extensively landscaped. Dense vegetative cover was present in 1994 when the property was donated to the SMMC and can be seen in the 2001 aerial photograph (Figure A3).

The modification of the stream channel, temporarily impacted water quality and permanently impacted the flood attenuation function of the creek channel. With the installation of the rock walls, stream discharge rates increased due to the loss of infiltration into the surrounding areas and loss of dissipation by vegetation growing near the channel. In order to counteract the adverse hydrological effects of the solid drainage structure, gabions were installed in conjunction with the wall construction. A total of nine gabions (or check dams) were placed in the creek channel. The purpose of the gabions was to intercept storm runoff, attenuate stormwater runoff, and retain sediment.

Other site modifications also included footbridges over the creek, a 15-foot rock dam, the two 30-foot concrete waterfall structures and terrace gardens. The three pedestrian bridges were also constructed over the creek. The rock dam and the two waterfall structures were placed into ephemeral drainages on the western slope of the canyon to reduce potential surface erosion.

EXISTING SITE CONDITIONS FROM 1994 TO PRESENT

After the Park was donated to the SMMC, activities were limited to upkeep of the structures and landscaping of the grounds adjacent to Ramirez Creek. During recent site visits by LSA, the riparian habitat was found to be in a similar condition as described by Paul Edelman, the SMMC Staff Ecologist, from surveys conducted in 1995 (Edelman, 1995). No additional impacts have occurred to the riparian habitat at the site since its acquisition by the SMMC.

The mature riparian trees currently found in the canyon include California sycamore (*Platanus racemose*), white alder (*Alnus rhombifolia*), arroyo willow (*Salix lasiolepis*), and red willow (*Salix laevigata*). The transitional upland species are California black walnut (*Juglans californica*), coast live oak (*Quercus agrifolia*), and California laurel (*Umbellularia californica*).

North of the Park's facilities, access to the creek channel is available on the western slope of the canyon and along the eastern slope where the landscaping transitions in the meadow from lawns and gardens to native vegetation. The surrounding upland slopes and detention basin have been planted with ornamental trees, shrubs, and vines. The Park landscaping has matured and covers most of the site (see 2001 aerial photo, Appendix A3). Currently, portions of these landscaped upland areas are being cleared or thinned to create a fuel modification zone as a fire safety measure.

The average width of the Ramirez Creek is 5 feet. The width of the riparian canopy varies from 60 to 80 feet along the 1,600 feet of creek channel located within the Park's property. Total impacts to the creek channel after 1977 are estimated to be 1,600 linear feet (0.18 acre).

RIPARIAN HABITAT ENHANCEMENT

The SMMC will be enhancing the stream habitat within the Park. The riparian habitat enhancement project entails creating riparian wetland habitat and re-establishing native plants along the creek and in the surrounding landscape.
Additional riparian habitat will be created on-site by removing the tennis court facilities (Penfield and Smith, 2001). The excavated site would be planted with native riparian tree and shrubs. The area of riparian habitat possible in the footprint of the tennis court is 0.16 acre. Part of the retaining wall adjacent to the tennis court site will be lowered to allow floodwaters to overflow into the created wetland area. Additional area would be restored at this site with the dismantling of the viewing stand and chain link fence.

In general, the creek restoration will entail planting container stock of sycamore, California rose, native clematis, and blackberry. Live stake cuttings of willow species found along the creek will be planted in areas cleared of non-native vegetation.

Implementation of the creek habitat enhancement plan will also include removing non-native plants and planting native vegetation on the creek banks and bed along the creek. Physical modifications include disassembling unnecessary sections of gabion baskets (intact and empty), installing pervious log and rock deflection structures to recreate natural slope to channel (Penfield and Smith, 2001) and removing irrigation within the canopy drip line of native oak trees.

Pre-construction surveys for breeding bird and other species of concern presence/absence surveys will be conducted prior to initiation of construction as required by CDFG. Work will be scheduled during the dry period of the year and to avoid prime bird nesting period. Optimal timing for the enhancement activities is from mid-June until the end of September. A biological monitor will be present during construction activities.

The best management practices include, but are not limited to, erosion control measures, compliance with litter and pollution laws, erosion control, soil stabilization, proper equipment maintenance, fueling off site, and avoiding the use of CDFG approved herbicides.

The success of the creek restoration will be evaluated by the following CDFG permit criteria: minimum plant growth, percent cover, and survival at the end of three years. The restoration areas should have a minimum of 80 percent survival after the first year and attain 100 percent survival after three years and/or 75 percent cover in three years and ultimately achieving 90 percent cover beyond three years. Reporting entails submitting an annual report to the CDFG for three years. The report shall include the survival, percent cover, height of the tree and shrub species, the number of plants replaced, and an overview of the restoration effort. Photographs from designated photo stations shall be included in the annual reports.

LITERATURE CITED

California Department of Fish and Game 2002. Streambed alteration agreement notification no. 5-2001-0196. Santa Barbara, California.

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I. K. Curtis Services, Inc. 1994. Aerial photos of a portion of Ramirez Canyon in 1976 and 1996. Burbank, California.

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Penfield and Smith 2001. Alternatives analysis for Ramirez creek habitat enhancement at Ramirez Canyon Park. Prepared for Santa Monica Mountains Conservancy by on Jan. 25. Riverside, California.

APPENDIX A

1975, 1976 AND 2001 RAMIREZ CANYON AERIAL PHOTOS

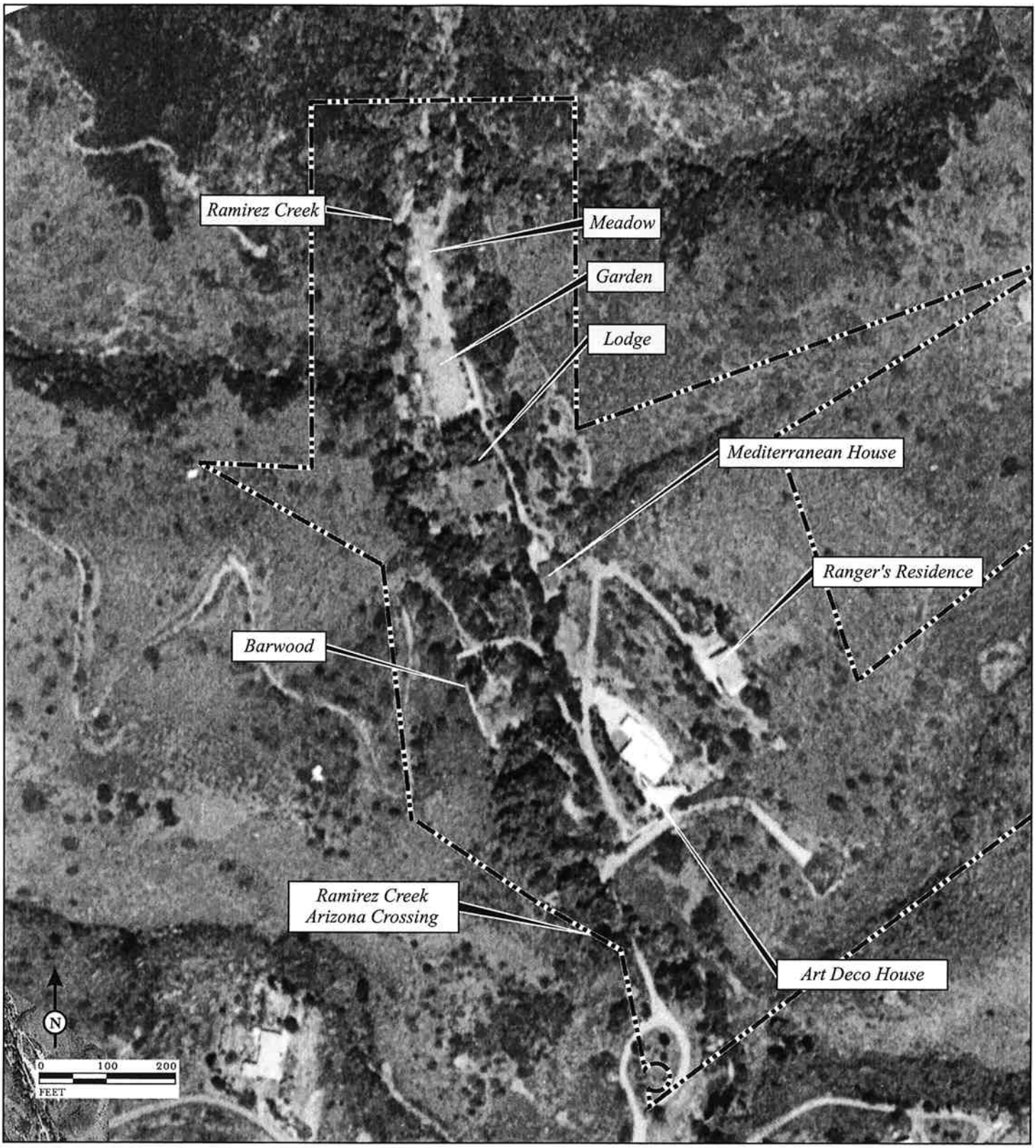

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FIGURE A1

PROPERTY BOUNDARY

Ramirez Creek Habitat Evaluation
1975 Aerial Photograph

AERIAL PHOTOGRAPH SOURCE: I.K. CURTIS SERVICES, INC., MAY 5, 1975.

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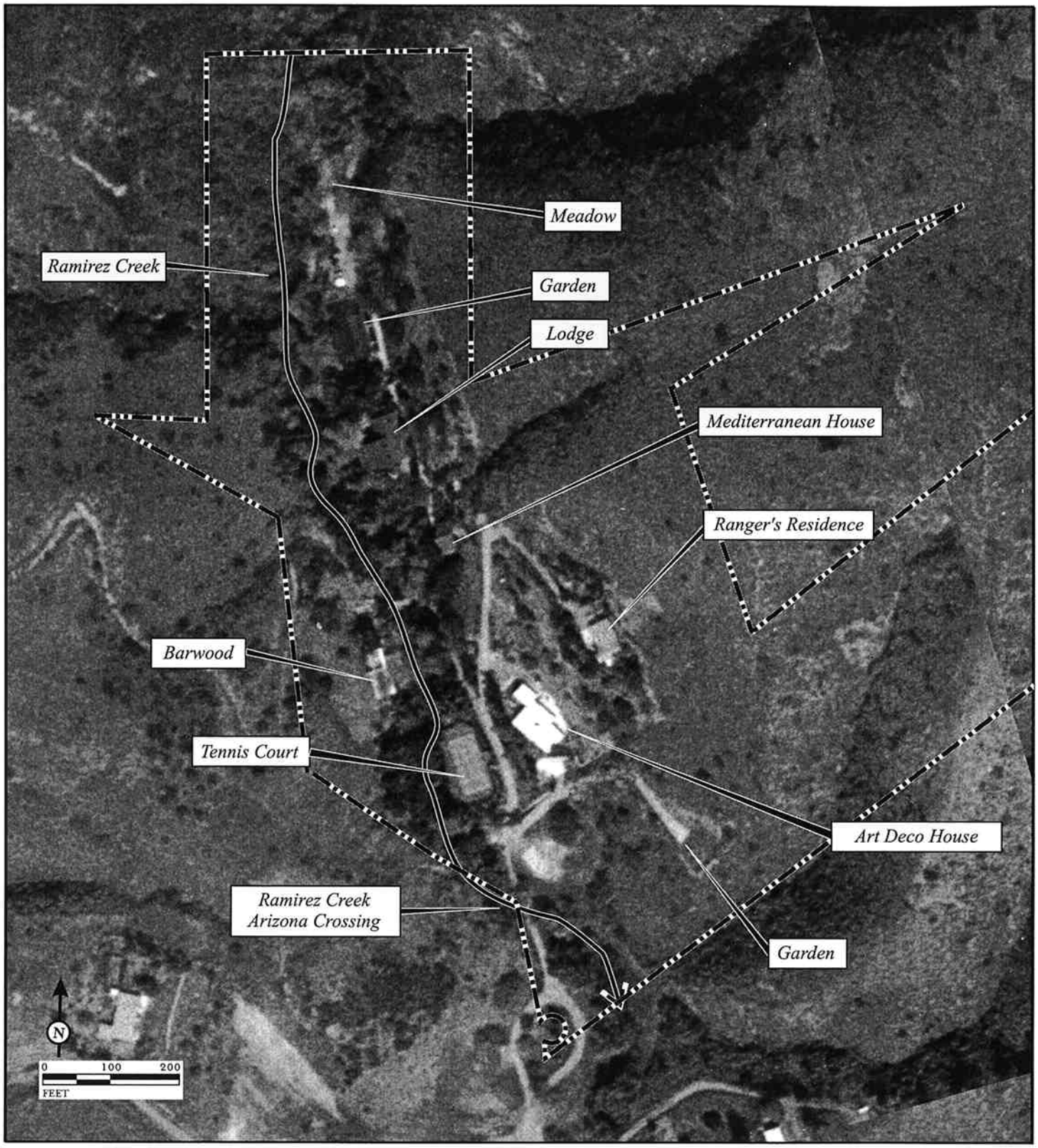

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FIGURE A2

PROPERTY BOUNDARY

RAMIREZ CREEK (ORIGINAL)

Note: Locations of Project Boundary and Ramirez Creek Are Approximate

AERIAL PHOTOGRAPH SOURCE: I.K. CURTIS SERVICES, INC., MARCH 22, 1976.

Ramirez Creek Habitat Evaluation

1976 Aerial Photograph

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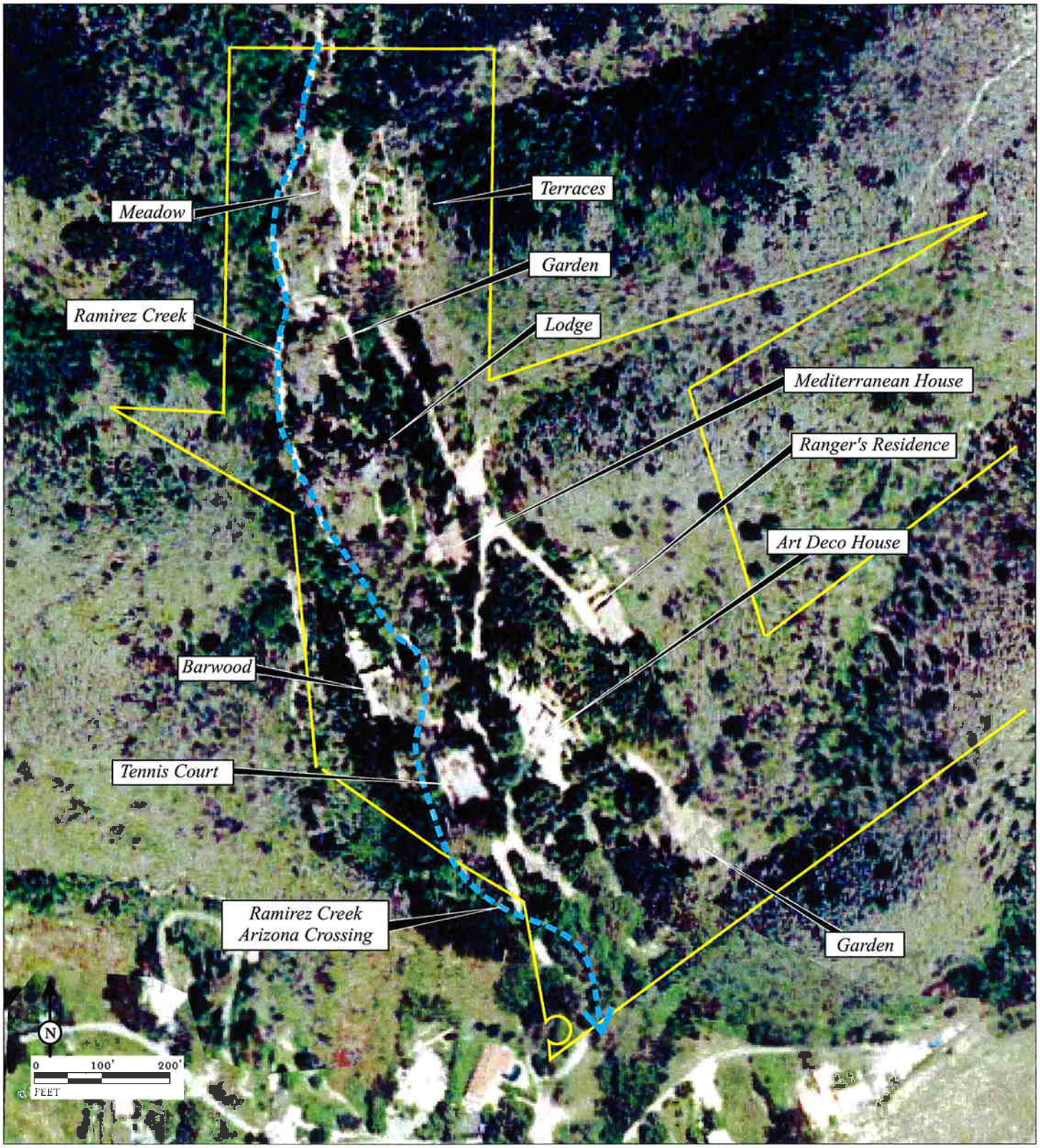

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FIGURE A3

PROPERTY BOUNDARY

RAMIREZ CREEK (MODIFIED)

Note: Locations of Project Boundary and Ramirez Creek Are Approximate

AERIAL PHOTOGRAPH SOURCE: EAGLE AERIAL, 2001

Ramirez Creek Habitat Evaluation

2001 Aerial Photograph

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